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DATE: 2013/4/3 15:53

SUBJECT: INTERVIEW AR[t] MAGAZINE

TO: LEV MANOVICH

Dear Lev,

Maybe you remember me from Facebook. I work at the Augmented Reality Lab in The Hague and I am one of the editors of the AR[t] magazine. When I read your article *The Poetics of Augmented Space*, I realized that I would like to interview you about Augmented Reality for the AR[t] magazine. A short time ago, I finally also read *The Language of New Media*. As a consequence, I'd like to interview you even more. So I hope you'll agree to an interview for the magazine?

Best regards,
Hanna

P.S. After my last few interviews, my supervisor (Edwin van der Heide) told me that I could/should be more critical towards my interview partners. So I'll challenge myself to challenge you.

P.P.S. Maybe we can print my questions in issue 3 and your answers in issue 4?

Augmented Reality

What is Augmented Reality?

To begin with, I would like to ask you what you consider Augmented Reality (AR) to be. In *The Poetics of Augmented Space* you describe AR as 'the laying of dynamic and context-specific information over the visual field of a user'. It would be great if you'd address the topic once more. Firstly, because our readers might not have read your article. And secondly, because I think that this point of view unnecessarily limits AR to the visual sense.

In *The Poetics of Augmented Space*, you mention Janet Cardiff's audio walks as great examples of laying information over physical space. These walks are designed for specific walking routes. While navigating the environment, one gets to listen to a mix of edited sounds that blend in with the sounds of the surroundings, as well as spoken narrative elements and instructions such as

where to go and what to look at. In contrast to 'typical' visual AR, the user is presented with *auditory* information that relates to the immediate surrounding space. Personally, I would call this Augmented Reality. Wouldn't you?

Augmented Space

What is special about AR compared to other forms of Augmented Space?

In your article *The Poetics of Augmented Space* you discuss the concept of Augmented Space. Augmented Space refers to all those physical spaces that are overlaid with dynamic information such as shopping malls and entertainment centers that are filled with electronic screens and all those places where one can access information wirelessly on phones, tablets or laptops. Besides AR, you mention several other technological developments in the context of Augmented Space, among which, for example, monitoring, ubiquitous computing,

tangible interfaces and smart objects. **Is AR just one of many related recent phenomena that play a role in overlaying the physical space with information? What's special about AR compared to other forms of Augmented Space?**

What else can be augmented?

Something I really like about your article is that you see augmentation as an idea and a practice rather than a collection of technologies. However, so far, you have only discussed the augmentation of *space*. I was wondering whether you have considered other manifestations of augmentation as well. I don't think augmentation is limited to a space or an environment. I'd even say that often it's not the space that is augmented, but something else.

For example, you mention software that performs tasks according to the mood, pattern of work, focus of attention or interests of their user. However, I am doubtful whether our experience of a space is affected by this kind of information. Let's imagine that my phone registered that I have been sitting still for a long time and reminds me to take a short break to stretch my legs. This information

that in AR, something virtual augments something real. More specifically, the virtual augments that to which it relates. In our view, space is one of the possibilities, but likewise, we have considered things like augmented objects, augmented humans, augmented perception, augmented content and augmented activities. What is augmented depends on what the additional content relates to. I am curious whether you'd agree. **Do you think that all forms of augmentation bring along an augmentation of space or influence our experience of the immediate surrounding space?**

Information and space — one coherent gestalt?

In *The Poetics of Augmented Space* you raise a question that intrigues me a lot. Do the real space and the dynamically presented information add up to one single coherent phenomenological gestalt or are they processed as separate layers?

I am a bit of a sound-person and it has always fascinated me that sometimes the sounds of a radio seem to mix in with environmental sounds. For example, the ticking of a red streetlight might perfectly mix in with the rhythm of the song that is currently playing. Listening to a radio play, an event could sound so real and so nearby, that I'd turn around, just to find, that nothing is happening there. But of course, most often, the sound of the radio just exists as a separate, independent layer of content. The voice of the newsreader doesn't mix with the voice of my colleague, nor does it relate to my environment. Most of the time, a song is just a song, and has nothing to do with the surrounding space. So judging from my experience of listening to the radio, information and the surrounding space can be perceived as one single mixed thing as well as independently. But besides these two options, there are more possibilities. For example, the newsreader might tell me about a traffic jam and thereby inform me about my immediate physical space. Here, the information and my spatial surroundings aren't perceived as a single gestalt, but nevertheless, there is a relationship between both.

I think the same is true for Augmented Space. Often, information and space might be related, even when they don't add up to one phenomenological gestalt. So some questions I'd like you to answer with respect to Augmented Space are: **When are information and space perceived independently from each other — would you still call these occurrences Augmented Space? When are information and space perceived as separate but related layers? And when and why do they add up to one single gestalt?**

New Media

One of the main questions I want to ask you is: **What makes Augmented Reality special?** I have posed that question with respect to other forms of augmented space. I'd like to ask it again with respect to the history of new media.

Personally, I don't think of AR as a recent phenomenon. Of course, there are more and more so-called AR applications, AR technologies and new media works that work with AR. However, when we consider the *concept* of AR, we find examples that date back centuries. An example of ancient AR is the Pepper's Ghost trick (which is discussed by Maarten Lamers on page 24). It uses a second room, glass and special lighting in order to let objects seem to appear, disappear or morph into each other in an otherwise real, physical environment.

But even if the concept isn't new, current manifestations of AR might still bring something new and special to the table. **If we look at contemporary AR and compare that with other forms of new media, what's special about it and what isn't?**

AR & the second space

From *The Language of New Media*, I understood that throughout media history, the screen was used to separate two absolutely different spaces. For example, this function of the screen applies

equally to renaissance paintings and to modern computer displays. When we imagine a typical AR scenario in which virtual objects are integrated into a real scene (e.g. a virtual bird is sitting on a real tree) there is no second space. It's the same physical space, which contains both virtual and real elements. **Is this a fundamental change in visual culture?**

AR & the quest for realism

The quest for realism in computer graphics is something that has always bored me. You note that new technological developments illustrate how unrealistic the previous existing images were. At the same time they remind us that current images will also be superseded. I was wondering: **How does AR fit in the widespread aspiration towards realism?** On the one hand, visual AR could be considered a huge step back. The 3D models that are usually integrated in real space don't come close to the level of photorealism we know from cinema. On the other hand, the virtual leaves the realm of virtual space and enters our real physical environments — with respect to that the images might be experienced as more realistic than ever...

Will AR take the quest for realism to a new level? I can imagine, when striving for realism, the virtual things that appear to exist in our physical space should not only look like real things — ideally they also feel like them, smell like them, taste like them and behave like them. **Will photorealism be traded in for a form of realism that encompasses all senses? Do you think new media will develop towards a more multimodal form?**

AR & cinema

In *The Language of New Media*, you relate different forms of new media — e.g. Virtual Reality, websites and CD-ROMs — to cinema. **How about the relation between AR and cinema?**

In AR, something virtual augments something real.

relates to one individual in the space (me), to the activity the person is performing (sitting still), but I don't think it has anything to do with the surrounding space. Hence, I might consider it an augmentation of the *activity* (not moving, sitting still) or an augmentation of the user (me), but I don't consider it an augmentation of space.

Edwin (my supervisor) and I have recently given this topic a lot of thought and we were fascinated by the questions: **"What is actually augmented in Augmented Reality? What else can (we imagine to) be augmented?"** We came up with the answer,

I'm certainly not a cinema expert, but I guess most of what we see in visual AR has been present in cinema for a long time. For example, AR research is very concerned with registering virtual objects in real space. As far as I understand it, this can be seen as an analogy to compositing in films: an attempt to blend the virtual and the real into a seamless whole 'augmented' reality. **Do you agree?**

You oppose compositing to montage: while compositing aims to blend different elements into a single gestalt, montage aims to create visual, stylistic, semantic, and emotional dissonance between them. **Do we have montage in AR as well?** (You give the example of montage within a shot, where an image of a dream appears over a man's sleeping head. The same could easily be done in AR.)

Does visual AR use similar concepts as cinema? Does cinema use other techniques to create fictional realities that are not (yet) used in AR? Does AR use techniques that might be adapted by cinema in the future?

AR as spatialized databases

One of the main claims in *The Language of New Media* is that at their basis, all new media works are databases. You argue that what artists or designers do, when creating a new media work, is constructing an interface to such a database.

Let's apply this database theory to a typical AR scenario in which virtual objects (seem to) appear in a real environment. We can see this as a database filled with virtual objects. The database might hold a virtual chair, a virtual pen and a virtual painting. These virtual objects are displayed as part of a real room when a user views the augmented environment with a smartphone. (Technically speaking, we could say the real world serves as a database index for those virtual elements.) What is the interface to access the database? Is it my phone? What does the artist create? I think it is usually the virtual content and its re-

lationship to something real. **Could we say that when working with AR, artists and designers create a database for an existing interface?**

I have one more question about databases. In *The Language of New Media* you write about the elements of a database:

"If the elements exist in one dimension (time of a film, list on a page), they will be inevitably ordered. So the only way to create a pure database is to spatialise it, distributing the elements in space."

In AR, virtual elements are distributed in real space. Can we understand this as a pure database? **What are the consequences of working with spatialized elements? What are the inherent limitations and possibilities when working with this form?** (I can imagine it has consequences, e.g. for storytelling? As you point out, we cannot assume that elements will form a narrative when they are accessed in an arbitrary order...)

AR & future research

With *The Language of New Media*, you did not only provide a theory of new media; you also pointed your readers towards aspects of new media that were still relatively unexplored at that time and you suggested directions for practical experimentation. **Are there certain aspects of Augmented Reality you consider especially interesting for future experiments and explorations?** ■

References

- Manovich, L. (2001). *The language of new media*. The MIT press.
- Manovich, L. (2006). The poetics of augmented space. *Visual Communication*, 5(2), 219-240.

"[...] the only way to create a pure database is to spatialise it, distributing the elements in space."

Lev Manovich, The Language of New Media

